

Remarks**Claim Rejections 35 USC § 112**

Claim 19 was rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 19 has been canceled from the instant application. New claim 20 has been added. Claim 20 is directed to a process for a hot repair of a refractory lining in a metallurgical vessel. Claim 20 sets forth active, positive steps in the claimed process.

Claim Rejections : 35 USC § 101

Claim 19 was rejected under 35 U.S.C. § 101 as an improper "use" claim. Claim 19 has been canceled in the instant application. New claim 20 is directed to a process for a hot repair of a refractory lining in a metallurgical vessel. Claim 20 recites the steps involved in the claimed process.

Claim Rejections: 35 U.S.C. § 102 and § 103

Claims 1-3 and 5-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Naito et al. (US Patent No. 4,334,029).

Claims 3 and 17 were rejected under 35 U.S.C. 103(a) as being unpatentable over Naito et al. (US 4,334,029).

35 U.S.C. § 102 Rejections: The Applicable Legal Standards

Anticipation pursuant to 35 U.S.C. § 102 requires that a single prior art reference contain all the elements of the claimed invention arranged in the manner recited in the claim. *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 U.S.P.Q. 193, 198 (Fed. Cir. 1983).

Anticipation under 35 U.S.C. § 102 requires in a single prior art disclosure, each and every element of the claimed invention arranged in a manner such that the reference would literally infringe the claims at issue if made later in time. *Lewmar Marine, Inc. v. Barent, Inc.*, 822 F.2d 744, 747, 3 U.S.P.Q. 2d 1766, 1768 (Fed. Cir. 1987).

Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. *RCA Corp. v. Applied Digital Data Sys., Inc.*, 730 F.2d 1440, 1444, 221 U.S.P.Q. 385, 388 (Fed. Cir. 1984).

35 U.S.C. § 103 Rejections: The Applicable Legal Standards

The Office has the responsibility to present a *prima facie* case of obviousness under 35 U.S.C. § 103. An Applicant is entitled to a patent if the Office fails to establish a *prima facie* case of obviousness. *In re Oetiker*, 24 U.S.P.Q. 2d 1443 (Fed. Cir. 1992). In determining obviousness under 35 U.S.C. § 103, the invention must be considered "as a whole."

Any modification of the cited reference in order to arrive at Applicant's invention must be motivated by the cited art. *In re Deminski*, 230 U.S.P.Q. 313 (Fed. Cir. 1986). Applicant's own disclosure may not serve as a template to piece together the teachings of the prior art to render the claimed invention obvious. *In re Fitch*, 23 U.S.P.Q. 2d 1780 (Fed. Cir. 1992). There must be a reason or suggestion in the prior art for selecting the claimed procedure, other than knowledge

learned from Applicant's disclosure. *In re Dow Chemical*, 5 U.S.P.Q. 2d 1529 (Fed. Cir. 1988). Further, the motivation for modifying a reference cannot be found if the reference actually "teaches away" from the claimed invention. *In re Gurley*, 31 U.S.P.Q. 2d 130 (Fed. Cir. 1994).

Claim 1

Applicants' hereby incorporate by reference their Remarks presented in the Response to the first Office action submitted October 18, 2005. Applicants traverse the Examiner's rejection of claim 1, and those claims which depend therefrom.

Claim 1 has been amended in the instant application to recite the transitional phrase "consisting of..." In a claim, the transition from the preamble to the body directs how the body should be interpreted. *See University of California v. Eli Lilly and Co.*, 39 U.S.P.Q. 2d 1225 (S.D. Ind. 1995), *aff'd*, 119 F.3d 1559, 43 U.S.P.Q. 2d 1398 (Fed. Cir. 1997), *cert. denied*, 523 U.S. 1089 (1998). The use of the phrase "consisting of" signifies that the claim is "closed," i.e., it excludes ingredients not specified in the claim. *AFG Indus., Inc. v. Cardinal IG Co., Inc.*, 239 F.3d 1239, 57 U.S.P.Q. 2d 1776 (Fed. Cir. 2001).

In the Final Action, the Examiner indicated that Applicants' prior use of the transitional phrase "contains" covered combinations including a phosphatic and a c-containing component, even in major amounts. (Final Action, page 5). Applicants submit that a proper reading of Applicants' claim 1, as amended, is that the claimed combination may include either a combination of at least one phosphatic and at least one silicatic component -OR- a combination of at least one C-containing component and at least one silicatic component. Therefore, because the cited art clearly teaches a combination of all three components, the use of the closed transitional phrase distinguishes Applicants invention from the cited art.

Claim 1, as amended, is thus not anticipated or obvious in view of Naito. In fact, Naito expressly *teaches away* from the either/or scenario. There is no disclosure in Naito of binder combinations having only 2 components according to criteria 1.2.1 and 1.2.2 of Applicants' claim 1. Additionally, the specific claimed binder components are selected from those which form a molten phase at temperatures $> 500^{\circ}\text{C}$. The applied reference does not teach or suggest a refractory composition whose phosphatic and/or silicatic component forms a molten phase at temperature $> 500^{\circ}\text{C}$.

Claim 1 has been further amended to recite micro-silica in amounts of 0 to < 2 M-% and oil in amounts of 0 to < 4 M-%. Support for the amendments to claim 1 are found in claim 15, as originally filed and in the examples provided in the Specification. In the examples, the components have been calculated based on 100% batch components. It is submitted that claim 1, as amended, clearly avoids the teachings or suggestions presented in Naito.

Claims 2-19

Claim 19 has been canceled from the instant application. Each of the claims 2-18 ultimately depend from claim 1. As such, the comments directed to claim 1 apply equally well to claims 2-18 and are incorporated herein by reference. Additionally, claim 7 is directed to a batch wherein the silicatic component is present in a grain-size fraction < 0.3 mm. The cited reference does not provide any teaching as to the grain-size fraction of the silicatic component.

Claims 9 and 10 recite that the components in the batch are proportioned so as to provide at least 15 M-%, and at least 20 M-%, respectively, of a molten phase at an application temperature. Applicants' specification teaches use of the claimed composition on hot refractory surfaces. The cited reference provides no teaching directed to molten phases at an application temperature. In

the reference, the composition is formed in a "green state" and then molded for use as a refractory product.

As to claims 3 and 17, in addition to the comments presented above, the claimed ranges for the non-basic refractory material (claim 3) and the total quantity of phosphatic and silicatic components (claim 17) fall outside the ranges provided in the cited reference. The Examiner uses the Abstract to support the rejection. However, the abstract clearly lists all three components conjunctively, a concept which teaches away from the instant claims.

One having skill in the art is therefore not motivated by the teachings of the cited reference to modify Naito to arrive at the claimed invention. Thus, claims 1-18, and particularly claims 3 and 17 are not anticipated by, nor obvious in view of, the cited reference.

Additional Comments:

The Applicants have not necessarily presented all of the reasons as to why Naito does not disclose or teach the claimed invention. Nevertheless, Applicants' remarks herein have shown that when the invention is taken as a whole, the cited reference does not teach or suggest the claimed invention, particularly with respect to the use of the term -OR- in claim 1. Additionally, one of ordinary skill in the pertinent art would not have been motivated by the teaching of the references to have made the modifications proposed by the Examiner, especially since the reference teaches away. The Office has therefore failed to provide a *prima facie* case of obviousness within the meaning of 35 U.S.C. § 103(a). Thus, it is respectfully submitted that the rejections should be withdrawn.

Claim 20

New claim 20 is directed to a process for *hot repair* of a refractory lining in a metallurgical vessel. The process includes the steps of *throwing a sack* including the batch according to claim 1 in *dry form* on a damaged site so that the *sack splits* and the batch contacts the refractory lining. Support for new claim 20 is found in Applicants' original disclosure, i.e., at page 3, lines 16-22; page 4, lines 19-page 5, lines 1-2; at page 8, lines 4-11. The batch contain no crystalline water or at least no significant proportion of water, but the components melt quickly when exposed to higher temperatures. The components are dry and firm at the outset when being mixed with the refractory matrix material, enabling the batch to be contained in bags. The bag may then be tossed onto a damaged hot refractory lining. Due to the intense heat, a molten phase is quickly formed to give the batch the desired fluidity. At the high temperature, the original powdery mix attains the desired flow characteristics, and can spread and flow into cracks or holes at the damaged site.

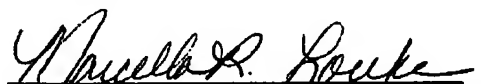
The process recited in claim 20 is not disclosed or suggested in Naito. With reference to column 8, lines 32-48, the Naito teaches a "wet" composition including a liquid component (siliceous binder solution) in an amount sufficient to "wet the surface of the powdery component: If the amount of the liquid component is insufficient, "water or a solvent may additionally be incorporated." The composition may be applied to the inner side of a furnace by means such as "trowelling, casting, spraying, and tamping." None of these procedures are directed to a "hot repair" as recited in the claim. There is no teaching or suggestion of a composition in dry form being contained in a sack that is thrown at a damaged site so that the sack splits and the batch contacts the refractory lining. It is therefore submitted that claim 20 is not anticipated by, or obvious in view of, the cited reference.

Conclusion

Each of Applicants' pending claims specifically recite features and relationships that are neither disclosed nor suggested in any of the applied prior art. Furthermore, the applied prior art is devoid of any such teaching, suggestion, or motivation for modifying features of the applied art so as to produce Applicants' invention. Allowance of all of Applicants' pending claims is therefore respectfully requested.

The undersigned will be happy to discuss any aspect of the Application by telephone at the Office's convenience.

Respectfully submitted,


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